December 13, 2004

Proposal: OP32545

Mr. Carl Rodriguez
Contracting Officer
Office of Acquisition Management, HAAM30-D
Federal Highway Administration
400 Seventh Street, SW, Room 4410
Washington, DC 20590

Dear Mr. Rodriguez:

Re: Contract No. DTFH61-01-C-00182, BA82B042; "Transportation Management Center Clearinghouse Development and Initiation"

Battelle is pleased to submit a proposal in response to Contract DTFH61-01-C-00182 on Task B, "Transportation Management Center Clearinghouse Development and Initiation." We are submitting the original and one copy to Andrea Papilion and one copy to Raj Ghaman. As the contract specified, we are also sending electronic copies to Andrea Papilion, Carl Rodriguez, and Barry Zimmer.
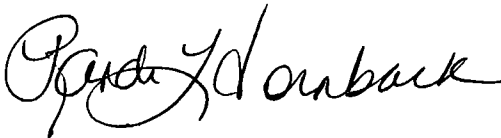
Mr. Gary Thomas from Texas Transportation Institute will lead this effort as Task Leader. The total cost of this proposal is $100,420 for 1,549 hours of labor.

All Electronic and Informational Technology (EIT) deliverables rendered under this contract will comply with Section 508 of the Rehabilitation Act and Access Board Standards. Unless otherwise indicated, Battelle represents by submission of this proposal that all deliverables will comply with the Access Board standards.

For all deliverables under this project that are not EIT as defined under Section 508 of the Rehabilitation Act (29 U.S.C. 794d) as amended, and the Access Board standards, or are exempt therefrom, the above representation shall not apply.

Questions of a technical nature may be directed to Battelle's Task Manager, Mr. Bill Tate at (614) 424-3315, contractual questions should be directed to me at (614) 424-7092.

Sincerely,

Gloria L. Miller
Contracting Officer

BATTELLE

Proposal OP32545

Technical Support and Assistance for the FHWA's Office of Transportation Operations

DTFH61-01-C-00182/BA82B042

Transportation Management Center Clearinghouse Development and Initiation

to

Federal Highway Administration

December 13, 2004

Battelle
The Business *of* Innovation

Texas
Transportation
Institute

TECHNICAL PROPOSAL

OBJECTIVES

The purpose of this project is to develop, initiate, support, and maintain a central clearinghouse located on the World Wide Web that houses a comprehensive collection of Transportation Management Center (TMC) related resources. The TMC clearinghouse is intended to facilitate the sharing of information among practitioners and the dissemination of innovative tools, processes, problem solving efforts, and capacity building efforts to assist TMC practitioners in performing their duties and achieving the goals and objectives of their respective TMCs. This clearinghouse will allow practitioners to share, exchange, and easily access a wide array of TMC related resources at a central location. It will also provide a collection of the problems faced, experience, and lessons learned by the existing TMCs to assist practitioners in resolving similar issues.

The project is also intended to assess the staffing, resources, data management, and warehousing needs for the on-going support and maintenance of the clearinghouse. Also included in this task are the requirements to produce a presentation and a fact sheet to assist with the outreach and awareness related to this project.

The TMC clearinghouse will collect and organize TMC-related information and resources that are currently available, to allow the user to quickly find and access the appropriate information. The key activities to be covered in this task include:

- Develop a central clearinghouse to house a comprehensive collection of TMC resources. This clearinghouse will be located either within the existing Institute of Transportation Engineers (ITE) TMC Committee Web Site (at http://www.tmcite.org) or on a separate server with its own unique address (e.g., http://www.tmcclearinghouse.org)
- Collect and/or provide links to TMC-related data and information, including facility and project inventories on TMCs, freeway management systems, traffic management systems, signal control systems, etc.; available resources and literature; current projects and future initiatives; upcoming events; training courses; and software and tools
- Develop protocols and establish online forums for discussion and information exchange
- Develop a TMC facility and project inventory database as part of the clearinghouse
- Develop standardized forms and web-based interfaces to allow agencies to post, modify or update their project and facility information in the inventory database
- Develop methods and procedures for performing on-going support, maintenance and updates
- Identify staffing and resources required to the long-term support and maintenance of the clearinghouse.

BACKGROUND

TMCs play a vital role ensuring the safe and efficient movement of people and goods in the surface transportation system on a daily basis. A significant amount of TMC-related resources

and literature are currently available to provide knowledge, tools, experience and guidance to assist TMC practitioners in performing their duties and achieving the goals and objectives of their perspective TMCs. However, there is a lack of a common information repository that allows practitioners to easily access, share, and exchange a wide array of TMC related resources. Searching for appropriate TMC references could be time-consuming, and critical information may easily be missed if it is not categorized in an organized manner.

Transportation practitioners and professionals can greatly benefit from having a central clearinghouse that stores and organizes TMC-related information resources that are currently available, to allow them to quickly find and access the appropriate information that they are looking for. A central clearinghouse can also provide practitioners and professionals a common place to exchange their experiences and techniques on a daily basis.

This online clearinghouse shall provide:

- A forum (or forums) where TMC managers and practitioners could discuss and exchange information on various TMC and traffic management-related subjects
- Links to other related initiatives, forums, and discussion groups in order to evaluate and adopt their experiences. Such groups include, but are not limited to: ITE Traffic Management Centers, ITE Traffic Incident Management, ITE Traffic Management Data Dictionary, Transportation Research Board (TRB) Freeway Operations Committee, TRB Traffic Signal Systems Committee, ITS America Transportation System Operations and Planning Forum, and I-95 Corridor Coalition Incident & Traffic Management
- A prospective resource for transportation management peer networking and national program development
- Links to other TMC and traffic management related web sites
- A collection of or access to TMC related information, including but not limited to: literature, policies, guidelines, plans, design documents, technical reports, research reports, presentations, conference proceedings, best practices, state of the practices, lessons learned, case studies, and images
- A facility and project inventory of TMCs, transportation management systems, freeway management systems, corridor management systems, and traffic signal control systems. The inventory database shall be created in Microsoft Access or equivalent format. Searchable and sortable mechanisms shall be provided within the inventory database
- Identified points of contact of TMC operating agencies for inquiry of information on their facilities and projects
- Standardized on-line forms for agency points of contact to post new or update existing project/facility information in the inventory database
- Lists of available training courses
- Lists of hardware, software, technologies available and required in future
- A list of upcoming TMC-related events
- Integration with existing mechanisms and web environment within the ITE TMC Committee web site

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- Quarterly status report automatically posted on the clearinghouse web site and send to practitioners regarding information on TMC-related projects, initiatives, available resources, and updates on the clearinghouse.

The tracking and monitoring feature of the ITE TMC web site usage is currently available. The web usage information will be made available to the Team, which may use the data to identify and evaluate the web traffic and demand and provide additional information to the web pages, as necessary.

The Team will be responsible for addressing all of the feedback that is received from various interests with each of the deliverables to be produced in this task order. The TMC Pooled Fund Study (PFS) members, or their designated representatives, will serve as the project review team that will be involved with and for providing feedback throughout this task order. Other practitioners will be added to this team based on their level of interest. On behalf of Federal Highway Administration (FHWA) and the TMC PFS, the Team will be responsible for sending electronic requests to practitioners asking to review and provide comments on the draft products to be produced at key milestones in this project.

The Contract Officers Task Order Manager (COTM) will provide an initial list of these practitioners to the Team. This list will include, but not be limited to, the ITE TMC Committee, ITE Traffic Incident Management Committee, TRB Freeway Operations Committee, TRB Traffic Signal Systems Committee, TRB HOV Systems Committee, and AASHTO Subcommittee's. The outreach and interaction with these different groups is assumed to occur electronically either through e-mail correspondence or teleconferences. Status report meetings with the TMC PFS project review team and the COTM will occur monthly.

TECHNICAL APPROACH

Task A: Kick-off Meeting and Work Plan

A.1: Kick-off Meeting

Within 21 calendar days of contract initiation, the Team will attend a kick-off meeting with the Contract Officer's Task Manager (COTM), Raj Ghaman. At the kick-off meeting, the Team shall be prepared to present and discuss our approach to performing the activities identified in this task order. The Team's presentation (PowerPoint format) at the kick-off meeting shall also include work plan, key issues, critical path for each deliverable identified in the task order (e.g., key milestones, schedule, stakeholder involvement, and outreach), and staffing plan. This shall include but not be limited to the approach for completing the data collection, establishing protocols for information exchange, developing database, web interface, and clearinghouse, preparing documentation, and assessing support and maintenance needs.

An initial draft two-page project fact sheet shall be submitted prior to the kick-off meeting. This fact sheet will be updated at key milestones during the project. The information on this fact sheet shall include, but not be limited to, the purpose of the project, need for the clearinghouse, expected influence it is expected to have on practice, key challenges and cross-cutting issues, key

milestones, project deliverables, and contact information. *Task E* contains additional information on the project fact sheet. Based on comments received, a revised version of this project fact sheet may need to be resubmitted following the kick-off meeting.

The kick-off meeting will take place at either the FHWA Headquarters Office or Turner-Fairbank Research Center. Gary Thomas, the Team's Task Order Lead (TOL), will attend the kick-off meeting. The COTM may determine that the TOL could participate in this meeting via teleconference or videoconference. Other key personnel shall participate via teleconference.

A.2: Work Plan

The Team will prepare a detailed work plan illustrating the means and strategies for collecting and compiling information that is required for this project and developing the TMC clearing-house, inventory database, and associated web pages. The Team will submit the rationale, description, identify the key issues, potential examples for database, web interfaces and design, and estimated level of effort, schedule, itinerary, and receive COTM approval prior to initiating any work to collect this information. Within the work plan, the Team will recommend means and strategies for collecting TMC-related resources and information, lessons learned, or obtaining examples related to web-based inventories and clearinghouses. The work plan will also include an approach for developing an understanding of the institutional, technical, and procedural issues to consider challenges and other factors that may influence developing, sustaining, or using methods for data collection, data management, and information dis-semination.

Within 21 calendar days of contract initiation, the Team will submit to the COTM a work plan. The COTM will review the work plan and provide feedback within 14 calendar days of receipt from the Team. Within 45 calendar days of contract initiation, a conference call may be held with the Team to discuss the comments that are submitted by the COTM on the work plan. If requested, the Team will submit a revised work plan within 14 calendar days of receipt of written feedback from the COTM.

The very nature of a clearinghouse implies that the content on the web site will be dynamic in nature. Therefore, among the early decisions to be made are what type of database (Access, mySQL, Oracle, etc.) to use to store the data and what scripting language to use to retrieve the data (ASP, Cold Fusion, PHP, etc.). The decision on which technologies to choose is dependent on a number of factors such as where the site will be housed in the future, what skill sets the eventual web site maintainers are likely to have, and types of data that are stored in the database. These decisions will be made following the kick-off meeting after a thorough understanding of the future needs and plans of the web site is obtained.

Task B: Collect TMC Resources and Facility Inventory

B.1: Collecting TMC Resources

The Team will identify and collect TMC-related information and resources to be included in the clearinghouse. Such information will include but not be limited to literature, technical references, research reports, papers, case studies, best practices, legislation, policies, standards,

procedures, plans, inventory, facility performance information, marketing or technology transfer material, training, tools, software, and web sites.

Within 45 calendar days of contract initiation, the Team will submit a draft list of resources summarizing the identified information to be included in the clearinghouse. This draft document will also propose how information can be categorized, organized, and presented in a web environment. The COTM and the TMC PFS project team will review the draft list and provide feedback within 21 calendar days of receipt from the Team. If requested, the Team will revise the list or conduct more information collection and submit a revised document that is responsive to the COTM comments within 21 calendar days of receipt of comments.

Based on the funding level, it is not anticipated that the database will be completely populated at the conclusion of the project. The Team proposes to import resources that are currently in the ITE TMC committee database. We will also add a limited number of additional records to the clearinghouse. The records added will be representative of the types of data that a fully populated web site would contain.

B.2: Collecting TMC Facility Inventory

The intent of the TMC Facility Inventory is to compile TMC facility and project information in a web-based database. This inventory shall include facility and project information on TMCs and transportation management systems (including freeway management systems, corridor management systems, and arterial management systems). The information to be presented in the database shall include, but not be limited to:

- Name of the facility/project
- Location of the facility/project
- Operating agency/agencies
- Type of facility/project
- Functions capabilities and services provided
- Systems and components
- Areas covered
- Hours of operation
- Staffing (full time, part time, agency staff, contractor, etc.)
- Hardware and software
- Standards
- Unique characteristics
- Project status
- Agency point of contact.

The Team will work with the COTM and the project review team to identify additional information that is appropriate to include in the inventory. The Team will be responsible for collecting and compiling the information in a format that is agreed upon by the COTM.

Within 75 calendar days of contract initiation, the Team will submit to the COTM a sample inventory database that identifies the information to be included in the TMC inventory database. This sample database shall illustrate how TMC facility and project information is structured,

categorized, and organized. The COTM and the TMC PFS project team will review the sample inventory and provide feedback within 21 calendar days of receipt from the Team. If requested, the Team will submit to the COTM a revise sample database that is responsive to the COTM comments within 21 calendar days of receipt of comments.

The Team will continue collecting, compiling, and updating the information on TMC facilities and projects throughout the duration of this task order. However, based on the funding level, it is not anticipated that the database will be completely populated at the conclusion of the project.

Task C: Develop Web-Based TMC Clearinghouse

C.1: Develop Conceptual Clearinghouse and Inventory Database Design

The Team will develop a conceptual design of the web-based clearinghouse based on the desirable functions and features summarized throughout this task order and additional direction provided by the COTM. The Team will identify and review similar web clearinghouses and identify additional functions and features that can enhance the capability of the TMC clearinghouse. The conceptual design is intended to offer a glance at layout, structure, contents, context, functionality, and navigation of the web-based clearinghouse. The Team will address the following issues in the conceptual design of the TMC Clearinghouse:

- Information and resources to be included in the clearinghouse
- Recommended structure of the clearinghouse and how information and resources are organized and presented
- Protocols and online forums for discussion and information sharing
- Protocols for web administrator(s) and authorized users to update and maintain the clearinghouse in a secured environment, including mechanism(s) to allow continuously accepting new items and managing current items
- Conceptual design of the TMC facility inventory database and supported web pages
- How the clearinghouse and other protocols/applications will work with the existing web environment
- Identification and proposition of modifications and add-on features to accommodate the clearinghouse in the existing web environment.

Based on the decisions made in Subtask B.2 as related to the inventory layout, structure, and contents, the Team will collect and compile all relevant TMC facility and project information into an inventory database and develop associated web pages that are required to support the desirable functions of the TMC inventory. The conceptual design of the inventory database and associated web pages shall include the functions and features items listed in the background section of this task order. If deemed necessary, the Team will also create a secure (password-protected) web-based interface and develop a protocol to allow agencies with TMC facilities and projects to post, modify, or update data on their facilities and projects via designated agency contact. However, if in the work plan development it is determined that some other method of updating the database is more appropriate, this secure area will not be designed. If feasible, the inventory database and associated web pages shall be compatible with the existing ITE TMC web site.

The Team will create a coherent and consistent "look and feel" for the entire clearinghouse web pages. The Team will work closely with the COTM and TMC PFS project team to determine the preliminary layout, structure, contents, and organization of the clearinghouse. *If appropriate*, the Team will work closely with the ITE TMC Committee web support contractor to gain familiarity with the web server environment, structure, coding, technical makeup, specifications, and limitations.

Within 90 calendar days of contract initiation, the Team will submit to the COTM a conceptual design of the clearinghouse. The Team will setup a temporary web site to present this conceptual design. The COTM and the TMC PFS project team will review the design and provide feedback within 21 calendar days of receipt from the Team, which will submit a revised design that is responsive to the COTM comments within 21 calendar days of the receipt of these comments.

C.2: Final Design

The Team will develop and submit to the COTM a draft version of the clearinghouse within 210 calendar days of contract initiation. The COTM and the TMC PFS project team will review the draft version of the clearinghouse and provide feedback within 21 calendar days of receipt from the Team, which will submit a final design that is responsive to the COTM's comments and ready for testing within 28 calendar days of the receipt of these comments.

Task D: Testing

Each graphical browser like Netscape or Internet Explorer reads the code differently. As such, it is important to verify the code of web pages and applications on different browsers to see if results are acceptable. Different screen resolutions also make the pages look different. The intent of this testing is to examine the clearinghouse elements to see if it is accomplishing its objectives, if it is implemented correctly, and its domain information is correct and up-to-date. The goal of this evaluation is to identify problem areas.

D.1: Test Plan

The Team will develop a test plan that describes a detailed approach for testing each of the project objectives and clearinghouse elements. The test plan will identify, at a minimum, the following aspects to complete the test:

- Overview of the clearinghouse, the objectives of the test, and an overview of the quality assurance strategy
- Scope and objectives: approach, testing scope, testing process, and test entrance/exit criteria
- Testing schedule
- Resources: human, software, and hardware resources required. Computer platforms, operating systems, and web browsers and versions to be used for testing should be specified
- Roles and responsibility: management team, testing team, testing support team, and external support
- Error management

- Reviewing and status reporting
- Approvals.

The Team will submit to the COTM a draft Test Plan within 210 calendar days of contract initiation. The COTM and the TMC PFS project team will provide feedback within 21 calendar days of the receipt of this draft. Within 260 calendar days of contract initiation, the Team will submit a final Test Plan that is responsive to the COTM's comments. Tests cannot commence until the COTM has granted approval on the final Test Plan.

D.2: Conduct Testing

Upon the COTM's granting approval to proceed, the Team will conduct testing in accordance with the final Test Plan. It is anticipated that testing will commence within 300 calendar days of contract initiation. At the conclusion of the test, the Team will provide a report along with a checklist to summarize the testing results. The report should summarize tests performed, problems encountered, and possible causes, resolutions to the problems, and a complete testing result. The checklist that accompanies the report will indicate testing environments, components, features and functions tested, and the results of such tests in terms of pass or fail.

The COTM and the TMC PFS project team will review the Test Report and provide feedback within 21 calendar days of receipt from the Team. If requested, the Team will make changes to the clearinghouse design that are responsive to the COTM's comments and submit a revised design within 21 calendar days of receipt of written feedback from the COTM.

Task E: Implementation and Outreach

E.1: Web Implementation

Upon completing *Task D* and getting the COTM's approval to proceed, the Team will implement the TMC Clearinghouse either on the ITE TMC Committee web site or other web server system (as determined in the work plan) and formally release the clearinghouse for public viewing.

Transfer of the site to the ITE TMC Committee web site may not be possible if the software technologies chosen to be used in the database portion of the site are not completely compatible with the existing web server.

The Team will be responsible for transferring all files that are required to support the TMC Clearinghouse to the web server. The Team will work closely with the web site support contractor and the TMC PFS support contractor to implement file transfer and verify the web pages are working correctly. The Team will implement the TMC Clearinghouse within 345 calendar days of contract initiation and ready to formally release the clearinghouse and perform promotion and outreach activities.

E.2: Videoconference/Webcast Promotion

As part of the promotion and outreach activities, the Team's TOL (Gary Thomas) will participate in a national videoconference and/or webcast to promote the availability of the TMC Clearinghouse. The COTM will make all of the arrangements, perform the necessary outreach,

and facilitate this videoconference or webcast. The final project presentation in *Subtask E.3* will provide the basis for the Team's presentation. This videoconference or webcast will occur after the TMC clearinghouse has been approved by the COTM and released for public viewing.

E.3: Outreach Material

The Team will develop, submit, maintain, and distribute outreach-related items to support the needs of the COTM and TMC PFS members throughout the duration of this task order. The following is a list of the items that the Team will submit to the COTM for review and approval:

Project fact sheet: The purpose of the project fact sheet is to identify key aspects, profile successful practices, identify the benefits or value, and identify other related issues of developing the TMC Clearinghouse. The intended audience of this fact sheet is any individual who is engaged with or responsible for the planning, design, implementation, management, operation, and maintenance of TMCs and transportation management systems.

Similar fact sheets that are considered acceptable examples of what the Team will develop for this order include the Work Zone Safety Awareness or Customer Driven Satisfaction in Illinois that are accessible at: http://ops.fhwa.dot.gov/wz/factshet.htm. The final version of this fact sheet to be developed shall conform to the FHWA publication guidelines and the requirements specified in Section 4 of this task order. FHWA will be responsible for publication and distribution of this fact sheet.

The Team will submit an initial draft of this two-page project fact sheet prior to the kick-off meeting and updated when appropriate at key milestones during the project. The Team will submit a revised draft copy of this project fact sheet within 300 calendar days of contract initiation. The COTM will provide comments to the Team within 21 calendar days. The Team will submit a final project fact sheet that is responsive to the COTM's comments within 21 calendar days of the receipt of these comments. The Team will perform minor editorial revisions to the final project fact sheet that is submitted to the COTM if required.

Project Presentation: This presentation would provide the overview of the project (e.g., issues/challenges in current practice, purpose of the project, expected outcome, products to be developed, intended audiences, schedule, etc.). The presentation will include speaker notes and will be periodically updated by the Team at key milestones during the project. The format of this presentation shall be in Microsoft PowerPoint. This presentation shall be submitted following the kick-off meeting and update when appropriate at key milestones during the project.

This presentation is assumed to be 20-30 minutes in length. The final version of the presentation shall conform to the FHWA publication guidelines and the requirements specified in Section 4 of this task order. FHWA will be responsible for publication and distribution of this presentation.

The Team will submit a draft copy of this presentation within 300 calendar days of contract initiation. The COTM will provide comments to the Team within 21 calendar days. The Team will submit a final presentation that is responsive to the COTM's comments within 21 calendar days of the receipt of these comments. The Team will perform minor editorial revisions to the final presentation that is submitted to the COTM if required.

E.4: Distribution Plan

The purpose of the distribution plan is to raise the awareness of the availability of the TMC Clearinghouse, identify the audiences that should receive the announcement, and develop items to support their distribution. Examples of a Distribution Plan, Distribution Letter, and Electronic Notice of the availability of the products produced by this task order can be accessed on the TMC PFS web site (http://tmcpfs.ops.fhwa.dot.gov) and will be provided to the Team. The focus of the Team's effort with this subtask will be to modify the examples that are provided to accommodate the subject and audience for the products produced. The level of effort for this subtask is considered very minor. The following are descriptions of these items:

- Distribution letter to FHWA Resource Centers and Division Offices
- Electronic notice identifying the availability of the clearinghouse and how to access to it
- Distribution list of agencies, organizations, web sites, listserv, and other interests should be notified of the availability of the products produced by this task order.

Within 300 calendar days of contract initiation, the Team will submit to the COTM a draft Distribution Plan, distribution letter, and electronic notice. The COTM will provide feedback within 21 calendar days of receipt. The Team will submit a final Distribution Plan, distribution letter, and electronic notice that are responsive to the COTM's comments within 21 calendar days of the receipt of these comments. The Team may be required to perform minor editorial revisions to the final versions of the items that are submitted to the COTM.

Task F: Support and Maintenance

On-going, day-to-day support and maintenance is essential to the successful operation and usefulness of the clearinghouse. The objective of this task is to identify and assess the methods, procedures, tools, and resources required for performing on-going support, update, and maintenance of the TMC clearinghouse.

F.1: Clearinghouse Support and Maintenance Manual

The Team will identify, develop, and document the methods and procedures for on-going support, updates, and maintenance of the clearinghouse. A manual shall be developed to provide step-by-step guide to assist web administrator(s), the TMC PFS support contractor, and other authorized users in performing day-to-day operation and maintenance of the clearinghouse.

Within 300 calendar days of contract initiation, the Team will submit to the COTM the draft version of the manual. The COTM and the TMC PFS project team will provide comments within 21 calendar days of receipt of this document. The Team will submit the final manual that is responsive to the COTM's comments within 21 calendar days of receipt of these comments. The Team will perform minor editorial and technical revisions on issues not addressed in the final document that is submitted to the COTM if required.

F.2: Long-Term Support and Maintenance

The Team will develop and document a plan, strategies, and tools for long-term operation, maintenance, and enhancement of the TMC Clearinghouse. Within this plan, the Team will also

identify and assess the future staffing, resources, and data management and warehousing needs to support the long-term operation, support, and maintenance of the TMC Clearinghouse.

Within 300 calendar days of contract initiation, the Team will submit to the COTM a draft long-term support and maintenance plan. The COTM and the TMC PFS project team will provide comments within 21 calendar days of receipt of this document. The Team will submit the final plan that is responsive to the COTM's comments within 21 calendar days of receipt of these comments. The Team will perform minor editorial and technical revisions on issues not addressed in the final document that is submitted to the COTM if required.

KEY PERSONNEL

Gary B. Thomas, P.E., Ph.D.

Dr. Thomas will serve as the Task Order Leader (TOL) on this project. Dr. Thomas is currently the Director of the Center for Professional Development. He has been with the Texas Transportation Institute since June 2001. Dr. Thomas has a bachelor's degree in civil engineering from the University of Minnesota and a master's and doctoral degree in civil engineering from Arizona State University.

Dr. Thomas has a diverse background in traffic and transportation engineering. He has spent approximately five years as a private consultant with Lee Engineering in Phoenix, Arizona and SEH, Inc. in St. Paul, Minnesota. Much of that time he was involved in traffic signal system design, traffic impact studies, GIS applications, signing and striping design, and transportation modeling. For three and a half years, he served as the first traffic engineer for Gilbert, Arizona (a city of nearly 100,000 in the Phoenix area). There he procured funding for the design and construction of an advanced traffic management system and oversaw the design before he left. Following that, he joined the civil engineering faculty at Iowa State University in Ames, Iowa where he taught courses in traffic engineering and airport planning and design.

In his current position, Dr. Thomas oversees the Center for Professional Development. The Center's mission is to educate current and future leaders of the transportation profession, transfer technology, and foster research that incorporates technology transfer and research implementation. The Center accomplishes this mission through workshops, seminars, career guidance, technology transfer, and research. He currently oversees FHWA's Travel Model Improvement Program (TMIP) outreach and marketing project which includes an extensive web site and associated document clearinghouse (http://tmip.fhwa.dot.gov).

Dr. Thomas is a fellow of the Institute of Transportation Engineers, a member of the Transportation Research Board, and is a registered professional engineer in Arizona and Texas.

Sandra L. Tucker

Ms. Tucker, research librarian at TTI since 1988, supervises TTI's Library and Information Services group (library services, Internet development, clearinghouses). She regularly conducts literature searches in support of research projects, using a wide variety of resources available through the Texas A&M University Libraries. She alerts researchers to new publications in their areas of interest and assists them in obtaining documents. Using her knowledge of the

transportation field, she works with librarians of the Texas A&M University Libraries to select materials for the transportation collection.

Ms. Tucker has supervised the development of several web sites and clearinghouses related to transportation, including the National Work Zone Safety Information Clearinghouse (http://wzsafety.tamu.edu). She currently manages the Transportation Pooled Fund web site (http://www.pooledfund.org).

Ms. Tucker was the chair of the panel for Project 20-32 of the National Cooperative Highway Research Program, "Development of a Comprehensive Thesaurus for Transportation Research." She chaired TTI's process team for intranet development and is a past chair of the Transportation Division of Special Libraries Association. She is currently chair of the Transportation Research Board's Committee on Library and Information Science for Transportation.

Bradley Hoover

Mr. Hoover is in charge of maintaining and developing both internal and external websites/web systems for TTI. He also has the responsibility for ensuring agency web servers are operational and secure.

Prior to joining TTI, Bradley served as a programmer/network administrator for two Texas-based companies within the private sector, during which time he developed several e-commerce and informational websites. Since joining TTI Bradley has developed or helped develop several websites including the Transportation Pooled Fund Project (http://www.pooledfund.org), MyStuff (part of TTI's internal website for research project tracking within the agency), TTINET (TTI's Intranet site), and a new website called Excalibur that will significantly improves the efficiency of data entry.

Mr. Hoover earned his B.S. in Computer Science from Texas A&M University in 1999. His work experience in information technology from both the public and private sector perspectives provides the team with a unique perspective that will positively impact the effectiveness of the web-based system development. Mr. Hoover excels in matching the needs of the customer with thorough, cost-effective information technology.

OTHER PERSONNEL

TTI Communications' mission is to communicate, support, and promote advances in transportation, education, and organizational communications. This team of communication professionals works closely with researchers and individual sponsors. Using state-of-the-art hardware and software, TTI Communications professionals produce web sites, interactive instructional tools, video presentations, newsletters, manuals, marketing plans, and outreach/public relations campaigns.

Within the TTI-Communications group are experts in the fields of web design, software applications, graphic design, database management, and document editing that area available to work on all aspects of the design and development of a web-based clearinghouse. Upon completion of the work plan, the Team will put together a team of individuals whose skills are appropriate for the particular needs of the TMC Clearinghouse web site.